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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,794	11/04/2003	Paul E. West	PACI002	5509

7590 12/14/2007

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EXAMINER	
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ART UNIT	PAPER NUMBER
2878	

MAIL DATE	DELIVERY MODE
12/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/700,794	WEST ET AL.
	Examiner	**Art Unit**
	Kevin Wyatt	2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-26* is/are rejected.

7)☒ Claim(s) *8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 January 2007* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the Amendment after non-final and remarks filed on 09/14/2007. Currently, claims 1-26 are pending.

Drawings

2. The drawings are objected to because characters for Figs. 1-4B, 6-7 and 9-11 are hand drawn. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1) in view of Kley (Publication No. U.S. 2002/0135755 A1).

Regarding claim 1, Tamayo de Miguel shows in Fig. 5, a scanning probe microscope for imaging the surface of a sample, comprising: a sensor (AFM head) comprising an oscillator (22, i.e., transducer) for producing a signal; a probe (23, i.e., cantilever) connected to the sensor; sensor electronics (combination of sensor (24), phase sensitive detector (36) and output (42)) connected to the sensor (AFM head) for monitoring the signal produced by the sensor; a frequency generator (32, i.e., vco) connected to the sensor electronics (via PI controller) to supply an electrical signal over a range of frequencies near a resonant frequency of the oscillator, whereby the resonant frequency of the oscillator is determined by sweeping the frequency generator from a starting frequency to an ending frequency and monitoring an output signal from the oscillator (paragraph 0066). Tamayo de Miguel does not disclose an optical microscope disposed with the probe positioned between the optical microscope and the surface of the sample with the probe within a field of view of the optical microscope for viewing a location of the probe mounted to the sensor for helping to position the probe with respect to a region of the surface of the sample to be imaged; means for scanning

the probe with respect to the sample. In addition, Tamayo de Miguel does not disclose a means responsive to the signal produced by the sensor electronics for moving the probe toward or away from the surface of the sample. Kley shows in Fig. 1 an optical microscope (162,160,174) disposed with the probe positioned between the optical microscope and the surface of the sample with the probe within a field of view of the optical microscope for viewing a location of the probe mounted to the sensor for helping to position the probe with respect to a region of the surface of the sample to be imaged. In addition, a means (112, i.e., z transducer) responsive to the signal produced by the sensor electronics for moving the probe toward or away from the surface of the sample. It would have been obvious to one skilled in the art to provide the optical microscope and the means responsive to the signal produced by the sensor electronics for moving the probe toward or away from the surface of the sample for the purpose of locating and positioning probe with respect to the sample.

Regarding claim 9, Tamayo de Miguel shows in Fig. 5 further comprising a holder (casing of AMF head which houses cantilever) for the sensor that facilitates rapid probe exchange.

Regarding claim 10, Tamayo de Miguel further discloses that the oscillator is operated at substantially its resonance frequency (paragraph 0066, lines 9-15).

Regarding claim 11, Tamayo de Miguel discloses the claim invention as stated above. The modified device of Tamayo de Miguel does not disclose a scanning probe microscope wherein the resonance frequency is greater than 400 kHz. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering

the optimum measurements involves only routine skill in the art. It would have been obvious to one skilled in the art to provide an oscillator having a resonant frequency greater than 400 kHz the modified device of Tomita for the purpose of providing a better resolution of three-dimensional image.

Regarding claim 12, Tamayo de Miguel further discloses that the oscillator operates in a shear force mode by vibrating the probe approximately parallel to the surface of a sample (paragraph 0019).

Regarding claim 13, Tamayo de Miguel further shows in Fig. 5 a cantilever (23) and wherein the probe is mounted to the cantilever and the cantilever is in turn mounted to the sensor to connect the probe to the sensor (via AMF head).

6. Claims 2, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1) in view of Kley (Publication No. U.S. 2002/0135755 A1) as applied to claim 1 above and further in view of Tomita (U.S. Patent No. 6,201,227 B1).

Regarding claims 2, 4 and 6, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tamayo de Miguel does not explicitly disclose that the oscillator is a resonant crystal oscillator as recited in claim 2. In addition, the modified device of Tamayo de Miguel does not disclose the resonant crystal oscillator is self-excited as recited in claim 4. The modified device of Tamayo de Miguel also does not disclose an external modulator provided proximate to the resonant crystal oscillator, and further comprising an excitation circuit for supplying an excitation signal to drive the modulator as recites in claim 6. Tomita discloses that the oscillator (4,

i.e., quartz oscillator) is a resonant crystal oscillator (col. 4, lines 9-11) in accordance with claim 2. Also, Tomita provides a resonant crystal oscillator that is self-excited (i.e., requires no input voltage for oscillations) in accordance with claim 4. Tomita shows in Fig. 1 an external modulator (combination of piezoelectric oscillator (2), quartz oscillator holder (25), XY fine displacement (13), and Z fine displacement (11)) is provided proximate to the resonant crystal oscillator, and further comprising an excitation circuit for supplying an excitation signal to drive the modulator (col. 4, lines 3-9 and 57-58) in accordance with claim 6. It would have been obvious to one skilled in the art to provide the resonant crystal oscillator of Tomita to the modified device of Tamayo de Miguel in view of Kley for the purpose of providing stablility to probe oscillating signal.

7. Claims 3, 5 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1) and Kley (Publication No. U.S. 2002/0135755 A1) in view of Tomita (U.S. Patent No. 6,201,227 B1) as applied to claim 2 above, and further in view of Sato (U.S. Patent No. 6,046,448).

Regarding claims 3 and 5, the modified device of Tamayo de Miguel discloses the claimed invention as stated above in claim 2. The modified device of Tamayo de Miguel does not disclose that the resonant crystal oscillator is a quartz crystal cross oscillator that is self-excited comprising a crystal base and an arm to which the probe is connected. Sato shows in Figs. 3-5 a cross crystal oscillator (18) is self-excited (i.e., requires no input voltage for oscillations). It would have been obvious to one skilled in the art to provide the cross crystal oscillator of Sato to the modified device of Tamayo de Miguel for the purpose of improving heat dissipation during oscillation.

Regarding claim 7, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tamayo de Miguel does not disclose an external modulator provided proximate to a quartz crystal cross oscillator. Sato shows in Figs. 3-5 a cross crystal oscillator (25). It would have been obvious to one skilled in the art to provide the cross crystal oscillator of Sato to the modified device of Tamayo de Miguel with Kley and Tomita for the purpose of improving heat dissipation during oscillation.

8. Claims 14-15, 18-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1) Kley (Publication No. U.S. 2002/0135755 A1) as applied to claim 1 above, and further in view of Chen (U.S. Patent No. 6,169,281).

Regarding claim 14, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tamayo de Miguel does not disclose that the means for scanning the probe with respect to the sample comprises a first electromechanical transducer and a second electromechanical transducer, the first electromechanical transducer having a first resonant frequency and the second electromechanical transducer having a second resonant frequency substantially lower than the first resonant frequency, and wherein the means responsive to the signal produced by the sensor electronics for moving the probe toward or away from the surface of the sample comprises a third electromechanical transducer having a third resonant frequency substantially higher than the first resonant frequency. Chen shows in Fig. 8, that the means for scanning the probe with respect to the sample comprises a

first electromechanical transducer (162 and 164, i.e., -X electrode and +X electrode), the first electromechanical transducer having a first resonant frequency (col.15, lines 34-36), and the second electromechanical transducer (172 and 174, i.e., -Y electrode and +Y electrode) having a second resonant frequency (col.15, lines 36-37) substantially lower than the first resonant frequency, and wherein the means responsive to the signal produced by the sensor electronics for moving the probe toward or away from the surface of the sample comprises a third electromechanical transducer (184, i.e., excitation electrode) having a third resonant frequency substantially higher than the first resonant frequency (col. 15, lines 37-40). It would have been obvious to one skilled in the art to provide the first, second and third electromechanical transducers of Chen to the modified device of Tamayo de Miguel with Kley for the purpose of providing a high response to a wide range of voltage signals.

Regarding claims 15, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tamayo de Miguel does not disclose the first electromechanical transducer scans in an X direction and has a resonant frequency R(X), the second electromechanical transducer scans in a Y direction and has a resonant frequency R(Y), and the third electromechanical transducer scans in a Z direction and has a resonant frequency R(Z), and R(Z) >> R(X) >> R(Y). Chen discloses that the first electromechanical transducer scans in an X direction and has a resonant frequency R(X), the second electromechanical transducer scans in a Y direction and has a resonant frequency R(Y), and the third electromechanical transducer scans in a Z direction and has a resonant frequency R(Z),

and R(Z) >> R(X) >> R(Y) (col. 15, lines 37-40 and 60-61). It would have been obvious to one skilled in the art to provide the first, second and third electromechanical transducers of Chen to the modified device of Tamayo de Miguel with Kley for the purpose of obtaining a high response to a wide range of voltage signals.

Regarding claim 18, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tamayo de Miguel does not disclose that the means responsive to the signal produced by the sensor electronics for moving the probe toward or away from the surface of the sample comprises a first feedback loop for producing a first control signal, a first electromechanical transducer having a first resonant frequency, a second feedback loop for producing a second control signal, and a second electromechanical transducer having a second resonant frequency, the first resonant frequency being lower than the second resonant frequency. Chen shows in Figs. 8-9, that the means responsive to the signal produced by the sensor electronics for moving the probe toward or away from the surface of the sample comprises a first feedback loop (a laser detector (138), band pass filter (244), x demodulator (243), ADC (250), computing system (144), DAC (193), amp (192), X-axis driver (118)) for producing a first control signal (col. 6, lines 21-22), a first electromechanical transducer (162 and 164, i.e., X-electrodes) having a first resonant frequency, a second feedback loop (a laser detector (138), band pass filter (140), z demodulator (141), comparison circuit (142), integrator (148), ADC (149) computing system (144), DAC (154), Z-axis driver (126)) for producing a second control signal (col. 6, lines 24-25), and a second electromechanical transducer (184, i.e., excitation

electrode) having a second resonant frequency, the first resonant frequency being lower than the second resonant frequency (col. 6, lines 20-25). It would have been obvious to one skilled in the art to provide the first, second and third electromechanical transducers of Chen comprising feedback loops to the modified device of Tamayo de Miguel with Kley for the purpose of providing greater control of tip motion.

Regarding claim 19, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tamayo de Miguel does not disclose a scanning probe microscope, wherein the first electromechanical transducer is employed to level the surface of the sample with respect to the sensor, whereby a range of motion imparted by the second electromechanical transducer to the probe is small. Chen discloses that the first electromechanical transducer is employed to level the surface of the sample with respect to the sensor, whereby a range of motion imparted by the second electromechanical transducer (184, i.e., excitation electrode) to the probe is small (col. 8, lines 13-24). It would have been obvious to one skilled in the art to provide the first and second transducers of Chen to the modified device of Tamayo de Miguel with Kley, having a small range of motion for the purpose of maintaining stability of tip motion.

Regarding claim 20, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tamayo de Miguel does not that the motions imparted by the first and second electromechanical transducers to the probe are orthogonal to the motion imparted to the probe by the third electromechanical transducer, whereby a range of motion imparted by the third electromechanical

transducer to the probe is less than a range of motion imparted to the probe by the first and second electromechanical transducers. Chen shows in Fig. 8, that the motions imparted by the first and second electromechanical transducers to the probe are orthogonal to the motion imparted to the probe by the third electromechanical transducer (col. 6, lines 55-58), whereby a range of motion imparted by the third electromechanical transducer to the probe is less than a range of motion imparted to the probe by the first and second electromechanical transducers (Figs. 10-11). It would have been obvious to one skilled in the art to provide the provide the first, second and third electromechanical transducers of Chen to the modified device of Tamayo de Miguel where motions of the first and second electromechanical transducers are orthogonal to the third transducer for the purpose of generating a tip motion that results in a signal producing a three dimensional image.

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1), Kley (Publication No. U.S. 2002/0135755 A1) and Chen (U.S. Patent No. 6,169,281) as applied to claim 15 above, and further in view of Furukawa (U.S. Patent No. 6,207,069 B1).

Regarding claim 16, the modified device of Tamayo de Miguel discloses the claimed invention as stated above in claim 15. The modified device of Tamayo de Miguel does not disclose that the electromechanical transducers that are piezoelectric ceramic actuators. Furukawa shows in Figs. 1-3 a ceramic piezoelectric actuator. It would have been obvious to one skilled in the art provide the ceramic piezoelectric

actuator of Furukawa to the modified device of Tamayo de Miguel with Kley and Chen for the purpose of producing the piezoelectric actuator at a lower cost.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1) Kley (Publication No. U.S. 2002/0135755 A1) and Chen (U.S. Patent No. 6,169,281) as applied to claim 15 above, and further in view of Normen (U.S. Patent No. 6,577,977 B2).

Regarding claim 17, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tamayo de Miguel does not disclose that the first electromechanical transducer is a voice coil and the second and third electromechanical transducers are piezoelectric ceramic actuators. Normen shows in Fig. 6, a transducer comprising a voice coil. It would have been obvious to provide the transducer of Normen to the modified device of Tamayo de Miguel with Kley and Chen for the purpose of providing low cost, overall performance.

10. Claims 21-22, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1) in view of Chen (U.S. Patent No. 6,169,281).

Regarding claim 21, Tamayo de Miguel shows in Fig. 5, a scanning probe microscope for imaging the surface of a sample, comprising: a sensor (AFM head) comprising an oscillator (22, i.e., transducer) for producing a signal; a probe (23, i.e., cantilever) connected to the sensor; sensor electronics (combination of sensor (24), phase sensitive detector (36) and output (42)) connected to the sensor (AFM head) for monitoring the signal produced by the sensor; a frequency generator (32, i.e., vco)

connected to the sensor electronics (via PI controller) to supply ~~a~~ an electrical signal over a range of frequencies near a resonant frequency of the oscillator, whereby the resonant frequency of the oscillator is determined by sweeping the frequency generator from a starting frequency to an ending frequency and monitoring an output signal from the oscillator (paragraph 0066). Tamayo de Miguel does not disclose a means for scanning the probe with respect to the sample comprising a first electromechanical transducer and a second electromechanical transducer, the first electromechanical transducer having a first resonant frequency and the second electromechanical transducer having a second resonant frequency substantially lower than the first resonant frequency; and means responsive to the signal produced by the sensor electronics for moving the probe toward or away from the surface of the sample comprising a third electromechanical transducer having a third resonant frequency substantially higher than the first resonant frequency. Chen shows in Fig. 8 a means for scanning the probe with respect to the sample comprising a first electromechanical transducer (162 and 164, i.e., -X electrode and +X electrode) and a second electromechanical transducer (172 and 174, i.e., -Y electrode and +Y electrode), the first electromechanical transducer having a first resonant frequency and the second electromechanical transducer having a second resonant frequency substantially lower than the first resonant frequency (col.15, lines 34-37); and means responsive to the signal produced by the sensor electronics for moving the probe toward or away from the surface of the sample comprising a third electromechanical transducer (184, i.e., excitation electrode) having a third resonant frequency substantially higher than the first

resonant frequency (col.15, lines 34-40). It would have been obvious to one skilled in the art to provide the first second and third electromechanical transducers of Chen to the device of Tamayo de Miguel for the purpose of obtaining a high response to a wide range of voltage signals.

Regarding claim 22, Tamayo de Miguel discloses the claimed invention as stated above. Tamayo de Miguel does not disclose the first electromechanical transducer scans in an X direction and has a resonant frequency R(X), the second electromechanical transducer scans in a Y direction and has a resonant frequency R(Y), and the third electromechanical transducer scans in a Z direction and has a resonant frequency R(Z), and R(Z) >> R(X) >> R(Y). Chen discloses that the first electromechanical transducer scans in an X direction and has a resonant frequency R(X), the second electromechanical transducer scans in a Y direction and has a resonant frequency R(Y), and the third electromechanical transducer scans in a Z direction and has a resonant frequency R(Z), and R(Z) >> R(X) >> R(Y) (col. 15, lines 37-40 and 60-61). It would have been obvious to one skilled in the art to provide the first, second and third electromechanical transducers of Chen to the device of Tamayo de Miguel for the purpose of obtaining a high response to a wide range of voltage signals.

Regarding claim 25, Tamayo de Miguel discloses the claimed invention as stated above. Tamayo de Miguel does not that the motions imparted by the first and second electromechanical transducers to the probe are orthogonal to the motion imparted to the probe by the third electromechanical transducer, whereby a range of motion imparted

by the third electromechanical transducer to the probe is less than a range of motion imparted to the probe by the first and second electromechanical transducers. Chen shows in Fig. 8, that the motions imparted by the first and second electromechanical transducers to the probe are orthogonal to the motion imparted to the probe by the third electromechanical transducer (col. 6, lines 55-58), whereby a range of motion imparted by the third electromechanical transducer to the probe is less than a range of motion imparted to the probe by the first and second electromechanical transducers (Figs. 10-11). It would have been obvious to one skilled in the art to provide the provide the first, second and third electromechanical transducers of Chen to the modified device of Tamayo de Miguel where motions of the first and second electromechanical transducers are orthogonal to the third transducer for the purpose of generating a tip motion that results in a signal producing a three dimensional image.

11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1) in view of Chen (U.S. Patent No. 6,169,281) as applied to claim 21 above, and further in view of Furukawa (U.S. Patent No. 6,207,069 B1).

Regarding claim 23, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tamayo de Miguel does not disclose that the electromechanical transducers that are piezoelectric ceramic actuators. Furukawa shows in Figs. 1-3 a ceramic piezoelectric actuator. It would have been obvious to one skilled in the art provide the ceramic piezoelectric actuator of

Furukawa to the device of Tamayo de Miguel with Chen for the purpose of producing the piezoelectric actuator at a lower cost.

12. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1) in view of Chen (U.S. Patent No. 6,169,281) as applied to claim 21 above, and further in view of Normen (U.S. Patent No. 6,577,977 B2).

Regarding claim 24, Tamayo de Miguel discloses the claimed invention as stated above. Tamayo de Miguel does not disclose that the first electromechanical transducer is a voice coil and the second and third electromechanical transducers are piezoelectric ceramic actuators. Normen shows in Fig. 6, a transducer comprising a voice coil. It would have been obvious to provide the transducer of Normen to the device of Tamayo de Miguel with Chen for the purpose of providing low cost, overall performance.

13. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamayo de Miguel (Publication No. U.S. 2003/0137216 A1) in view of Chen (U.S. Patent No. 6,169,281) as applied to claim 21 above, and further in view of Kley (Publication No. U.S. 2002/0135755 A1).

Regarding claim 26, the modified device of Tamayo de Miguel discloses the claimed invention as stated above. The modified device of Tomita does not disclose the scanning probe microscope comprises an optical microscope for viewing the location of the probe mounted to the sensor. Kley shows in Fig. 1, an optical microscope (160) for viewing a location of the probe mounted to the sensor (paragraphs 0151 and 0152). It would have been obvious to one skilled in the art to provide the optical microscope of

Kley to the device of modified Tamayo de Miguel with Chen for the purpose of localizing an area for the placement of tip over the sample.

Allowable Subject Matter

14. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

Claim 8 is allowable because the prior art fails to disclose or make obvious, either singly or in combination, a scanning probe microscope, comprising, in addition to the other recited features of the claim, a scanning probe microscope operable in a mode selected from the modes of magnetic force microscopy and electrostatic force microscopy and the signal produced by the sensor is used to determine characteristics of the sample selected from among the characteristics of magnetic and electrostatic properties, respectively.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Wyatt whose telephone number is (571)-272-5974. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571)-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K.W.

K.W.

Georgia Epps
Supervisory Patent Examiner
Technology Center 2800